

## 7. Fuel Injector

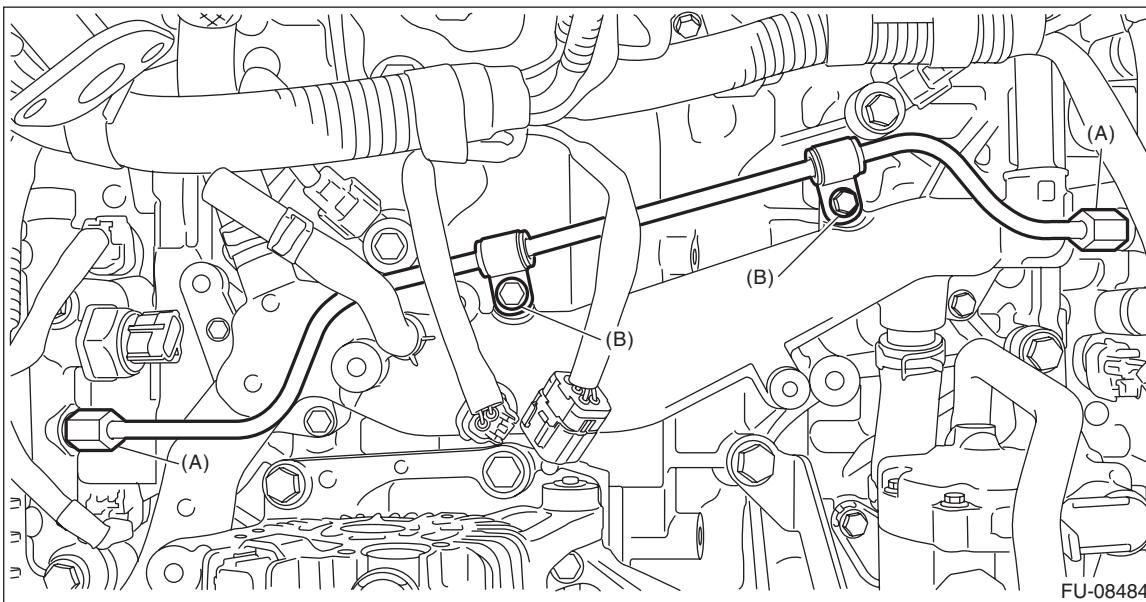
### A: REMOVAL

#### 1. FUEL INJECTOR RH

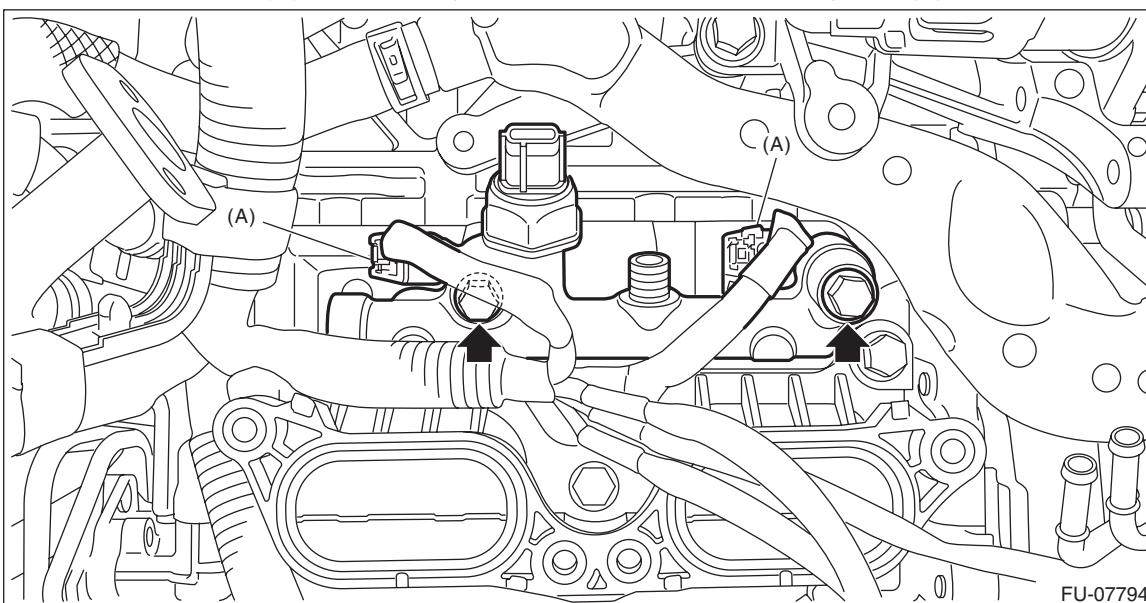
**CAUTION:**

- Be careful not to spill fuel.
- Catch the fuel from the pipes using a container or cloth.

- 1) Disconnect the ground terminal from battery sensor. <Ref. to NT-5, BATTERY, NOTE, Note.>
- 2) Remove the intake manifold. <Ref. to FU(w/o STI)-18, REMOVAL, Intake Manifold.>
- 3) Remove the fuel pipe insulator No. 1. <Ref. to FU(w/o STI)-47, FUEL PIPE INSULATOR NO. 1, REMOVAL, Fuel Insulator.>
- 4) Remove the fuel pipe insulator No. 2. <Ref. to FU(w/o STI)-47, FUEL PIPE INSULATOR NO. 2, REMOVAL, Fuel Insulator.>
- 5) Remove the fuel pipe insulator No. 3. <Ref. to FU(w/o STI)-48, FUEL PIPE INSULATOR NO. 3, REMOVAL, Fuel Insulator.>
- 6) Remove the flare nut (A) and bolt (B), and then remove the high-pressure fuel delivery pipe assembly.



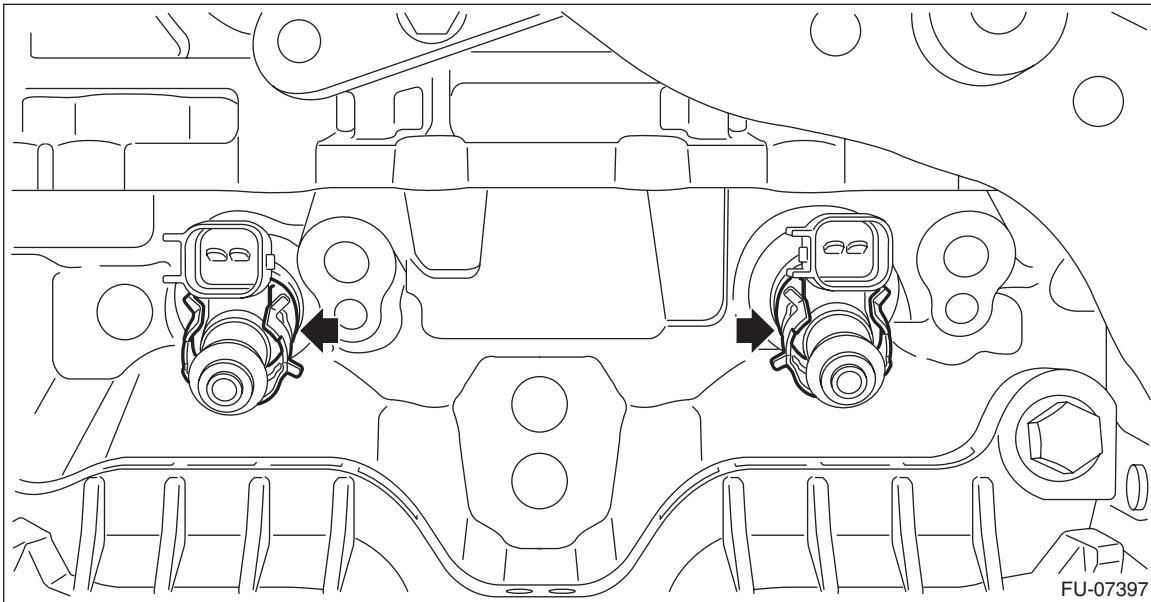
- 7) Disconnect the connector (A) from fuel injector, and remove the fuel injector pipe.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

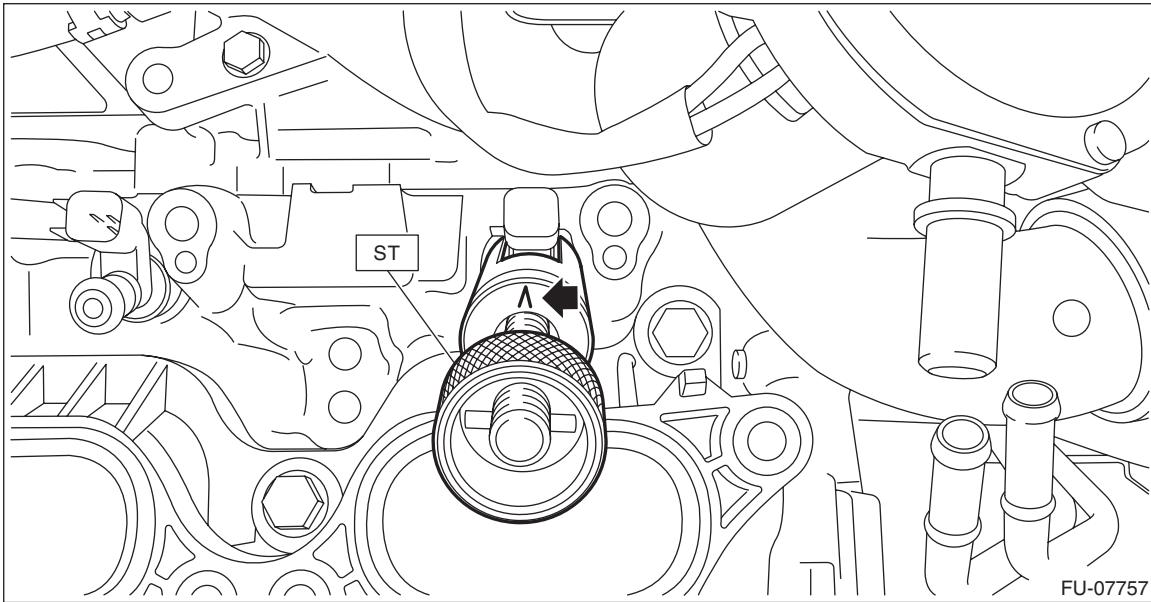
- 8) Remove the holder from the fuel injector.



- 9) Using ST, remove the fuel injector from the cylinder head.

ST 18356AA000 INJECTOR REMOVER

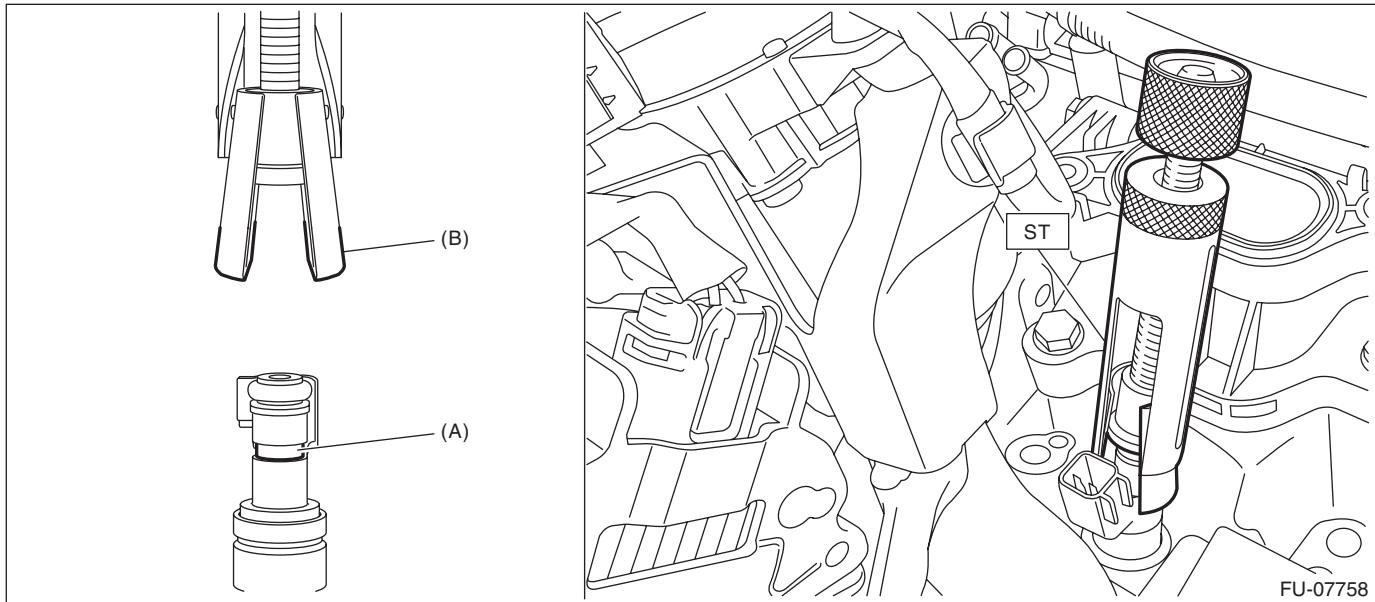
- (1) Set the ST so that its mark faces the center of the engine.



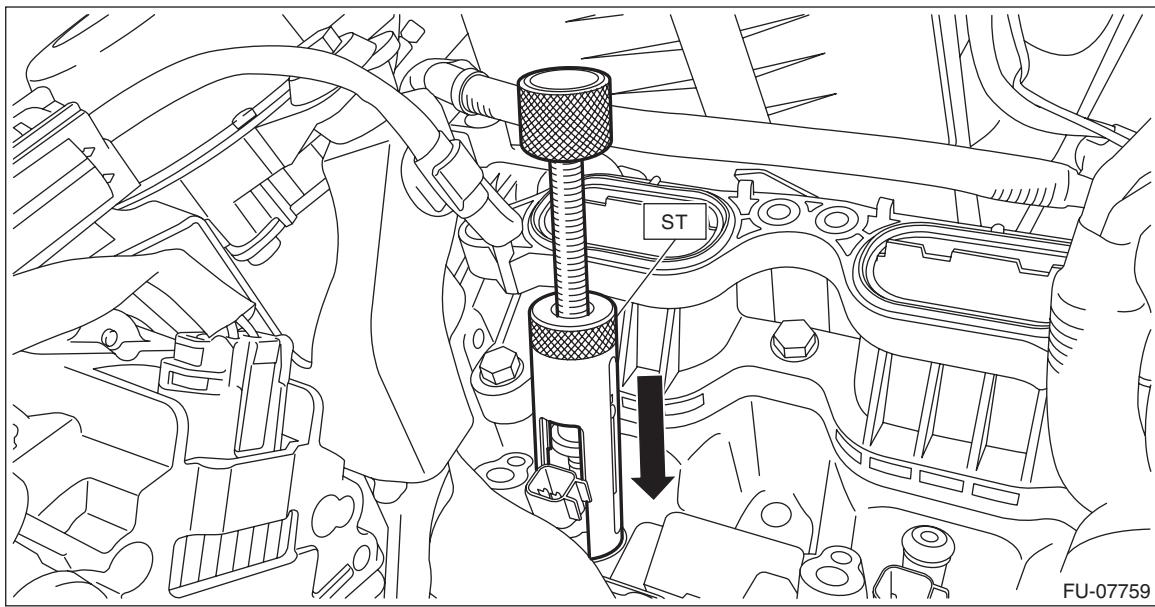
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

(2) Pinch the fuel injector groove (A) with the claw section (B) of ST.



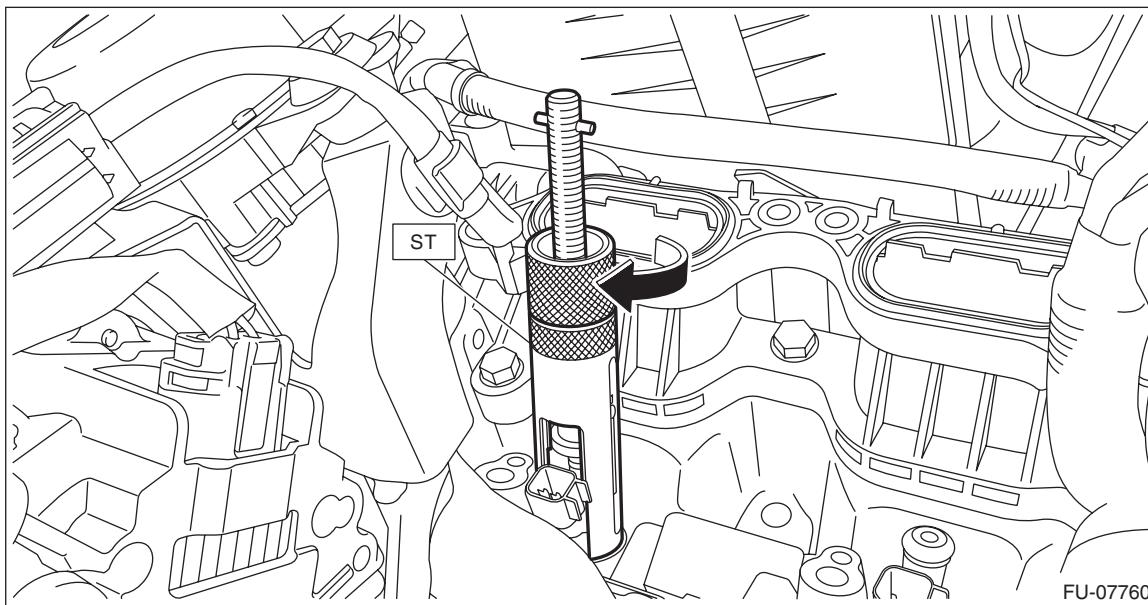
(3) Press the ST to the cylinder head.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

(4) Screw in the threaded section of the ST clockwise, and remove the fuel injector from the cylinder head.

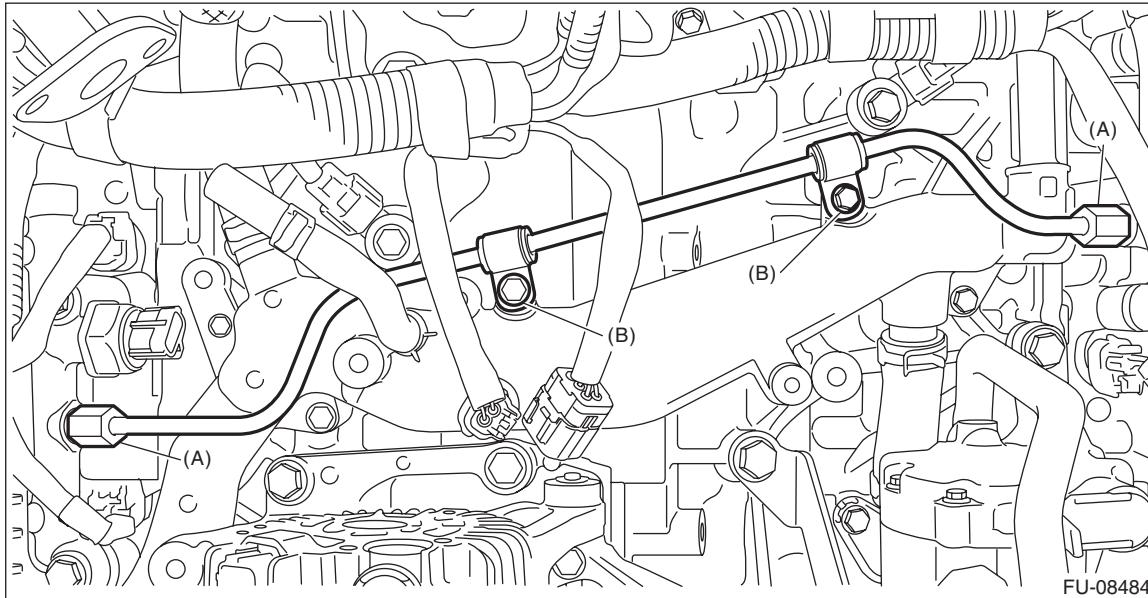


## 2. FUEL INJECTOR LH

### CAUTION:

- Be careful not to spill fuel.
- Catch the fuel from the pipes using a container or cloth.

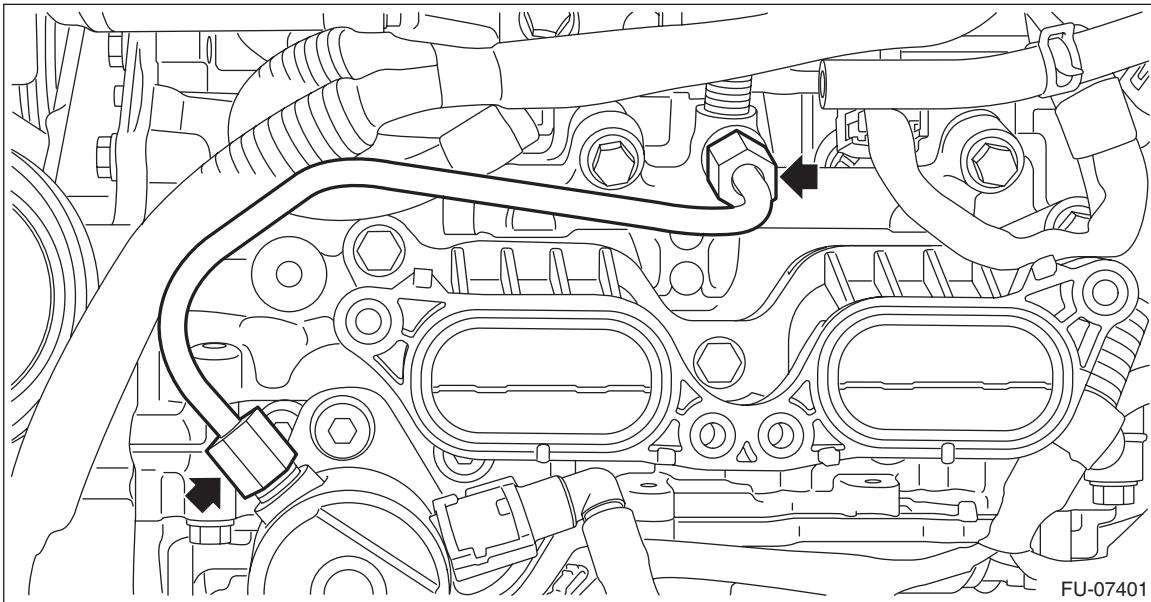
- 1) Disconnect the ground terminal from battery sensor. <Ref. to NT-5, BATTERY, NOTE, Note.>
- 2) Remove the intake manifold. <Ref. to FU(w/o STI)-18, REMOVAL, Intake Manifold.>
- 3) Remove the fuel pump insulator. <Ref. to FU(w/o STI)-46, FUEL PUMP INSULATOR, REMOVAL, Fuel Insulator.>
- 4) Remove the fuel pipe insulator No. 1. <Ref. to FU(w/o STI)-47, FUEL PIPE INSULATOR NO. 1, REMOVAL, Fuel Insulator.>
- 5) Remove the fuel pipe insulator No. 2. <Ref. to FU(w/o STI)-47, FUEL PIPE INSULATOR NO. 2, REMOVAL, Fuel Insulator.>
- 6) Remove the fuel pipe insulator No. 3. <Ref. to FU(w/o STI)-48, FUEL PIPE INSULATOR NO. 3, REMOVAL, Fuel Insulator.>
- 7) Remove the flare nut (A) and bolt (B), and then remove the high-pressure fuel delivery pipe assembly.



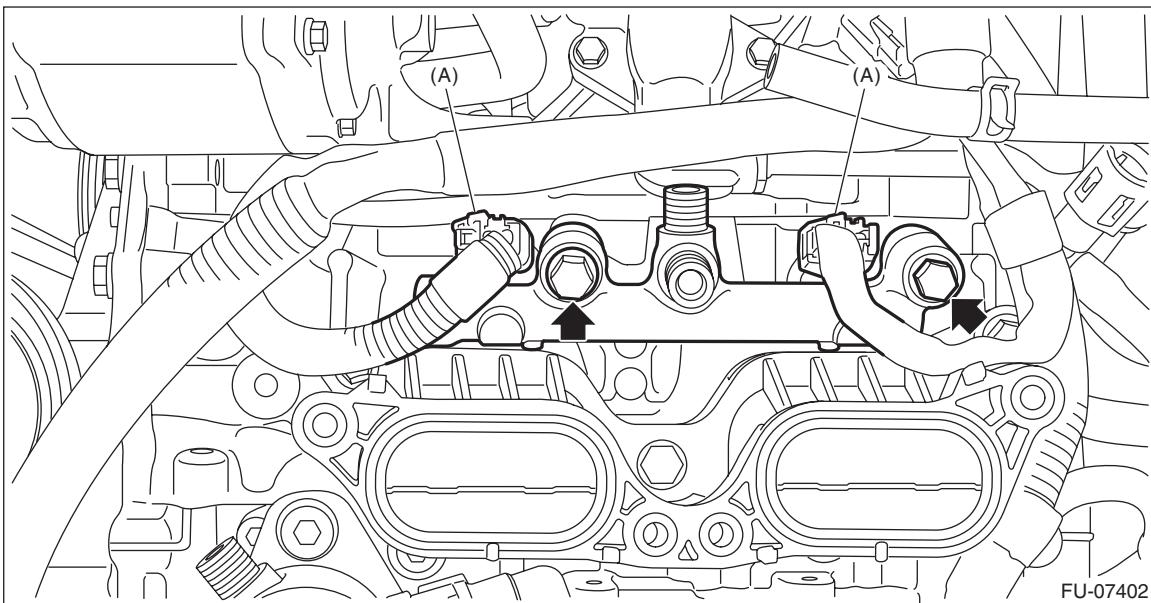
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

8) Remove the high-pressure fuel delivery pipes.



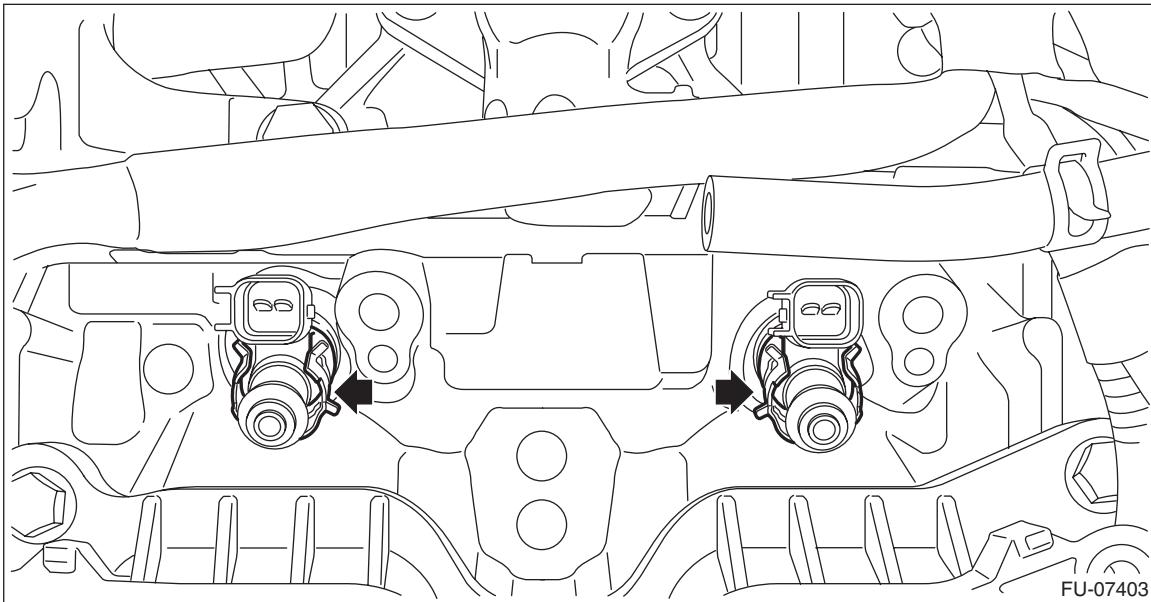
9) Disconnect the connector (A) from fuel injector, and remove the fuel injector pipe LH.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

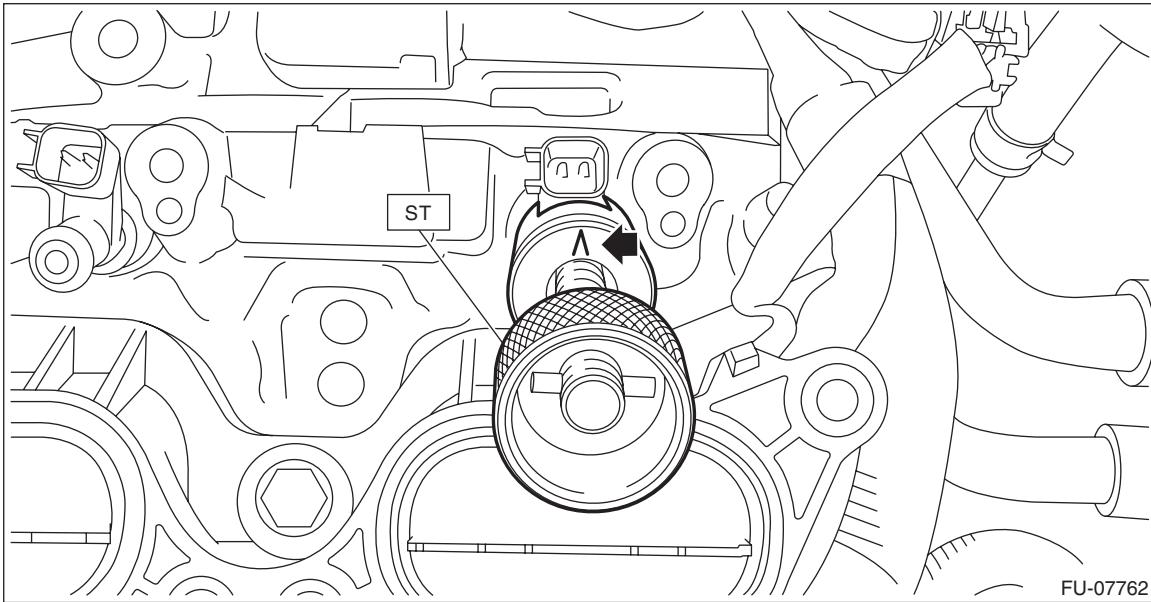
- 10) Remove the holder from the fuel injector.



- 11) Using ST, remove the fuel injector from the cylinder head.

ST 18356AA000 INJECTOR REMOVER

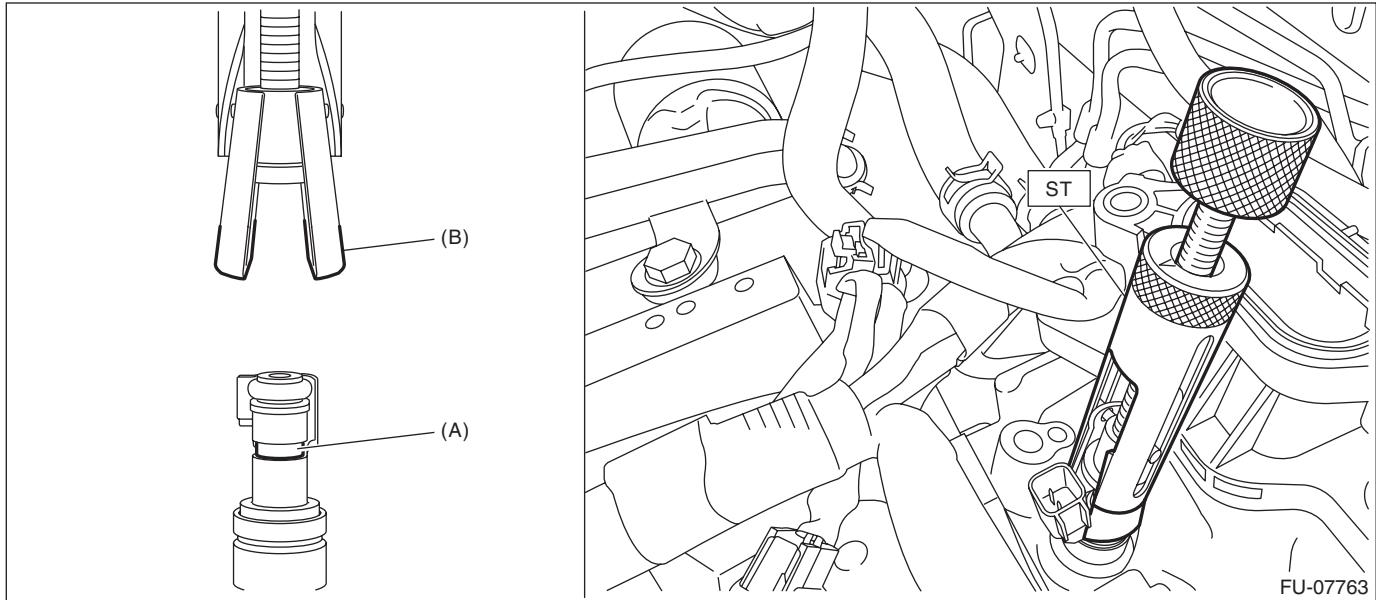
- (1) Set the ST so that its mark faces the center of the engine.



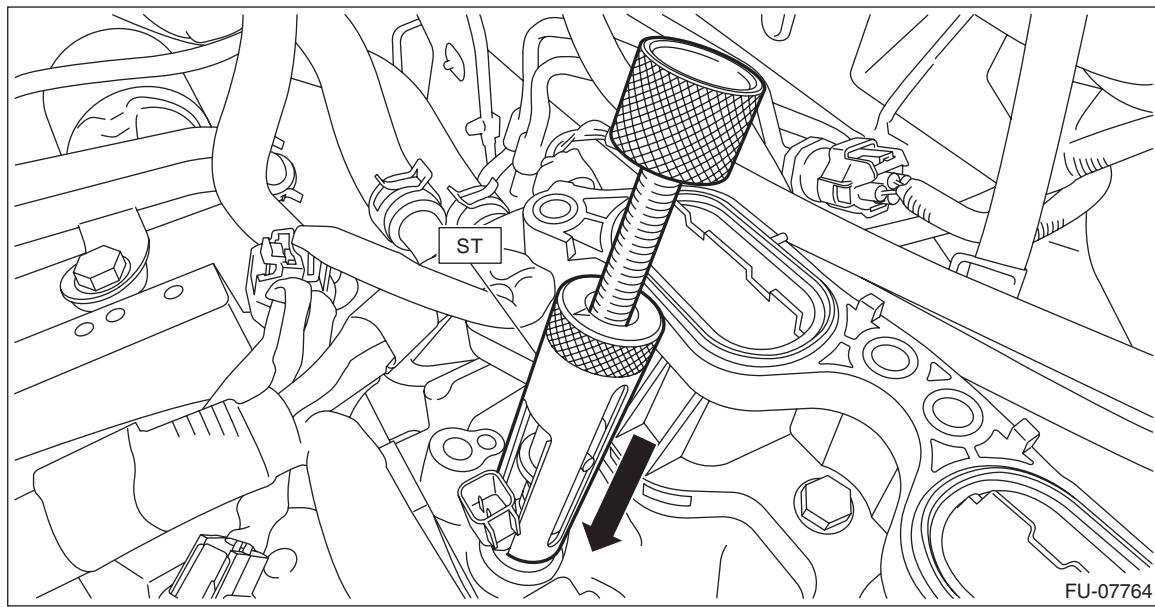
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

(2) Pinch the fuel injector groove (A) with the claw section (B) of ST.



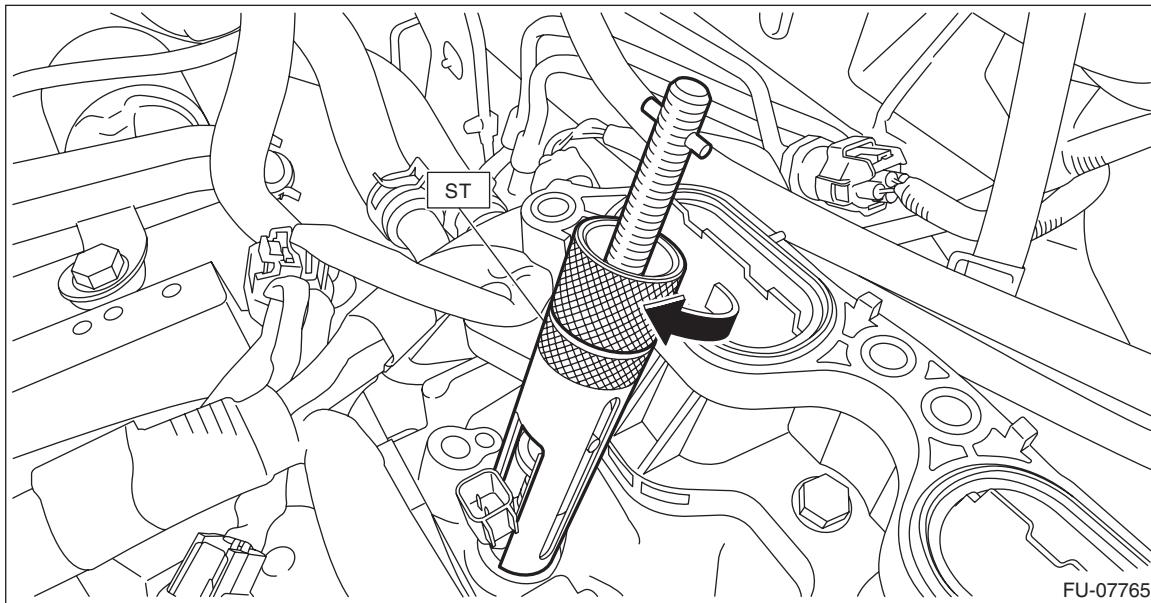
(3) Press the ST to the cylinder head.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- (4) Screw in the threaded section of the ST clockwise, and remove the fuel injector from the cylinder head.



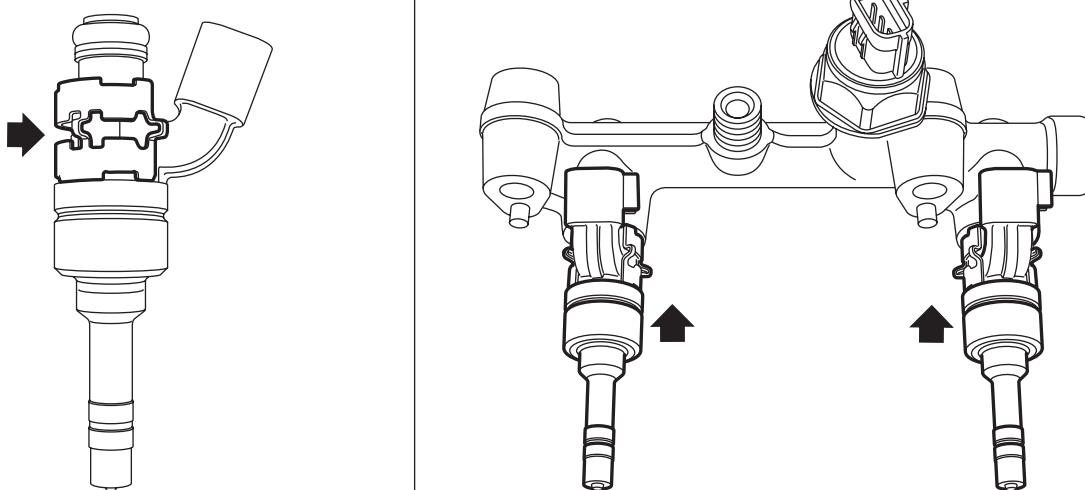
## B: INSTALLATION

### 1. FUEL INJECTOR RH

- 1) Replace injector seal, retainer, and O-ring with a new part. <Ref. to FU(w/o STI)-64, REPLACEMENT, Fuel Injector.>
- 2) Set the holder to the fuel injector, and install it to the fuel injector pipe RH.

**CAUTION:**

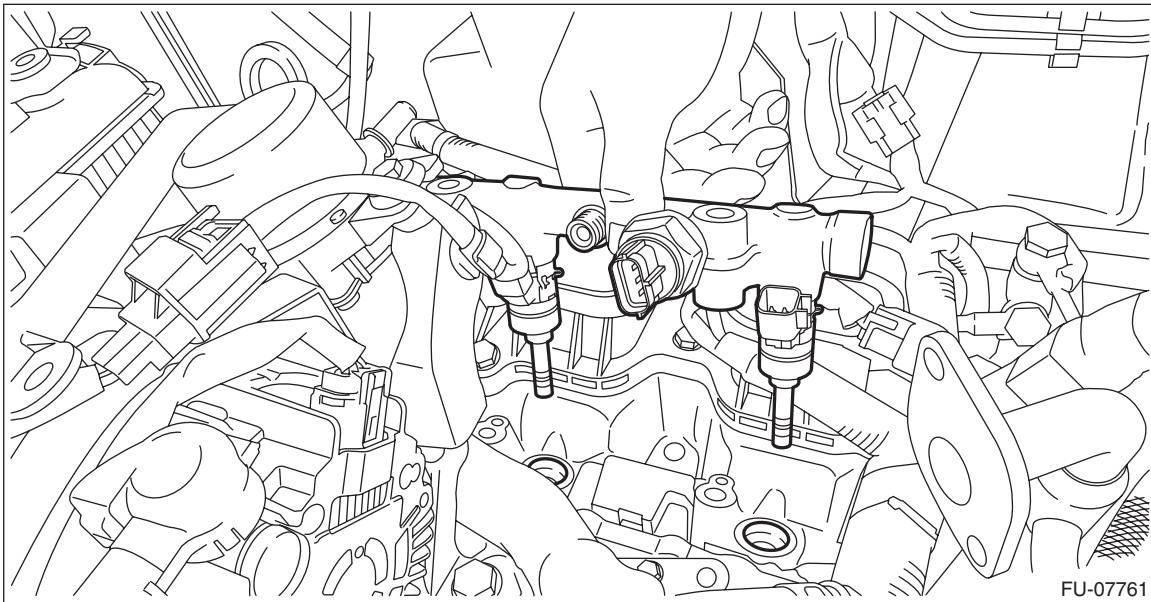
**Always use a new holder.**



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

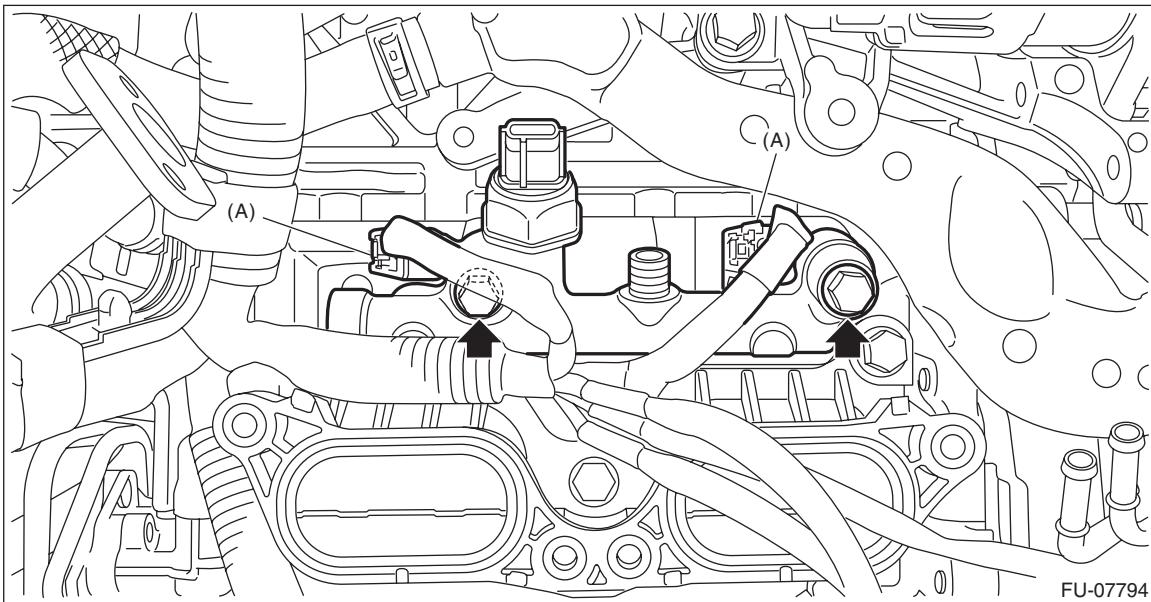
- 3) Install the fuel injector pipe RH and fuel injector as a single unit to the cylinder head.



- 4) Tighten the bolt on fuel pipe RH, and connect the connector (A) to the fuel injector.

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 5) Install the high-pressure fuel delivery pipe assembly.

### CAUTION:

**Always use a new high-pressure fuel delivery pipe assembly.**

(1) Temporarily tighten the flare nut (A) to the fuel injector pipe by hand until it is seated, and secure the high-pressure fuel delivery pipe assembly to the water pipe assembly using bolts (B).

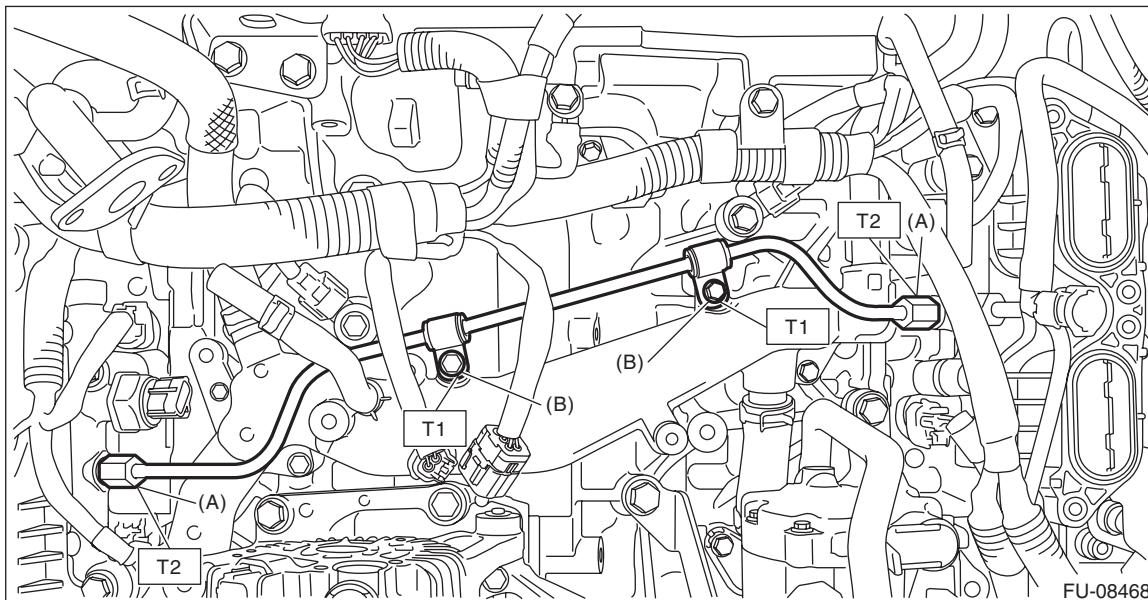
### Tightening torque:

**T1: 6.4 N·m (0.7 kgf·m, 4.7 ft-lb)**

(2) Tighten the flare nuts (A).

### Tightening torque:

**T2: 25 N·m (2.5 kgf·m, 18.4 ft-lb)**



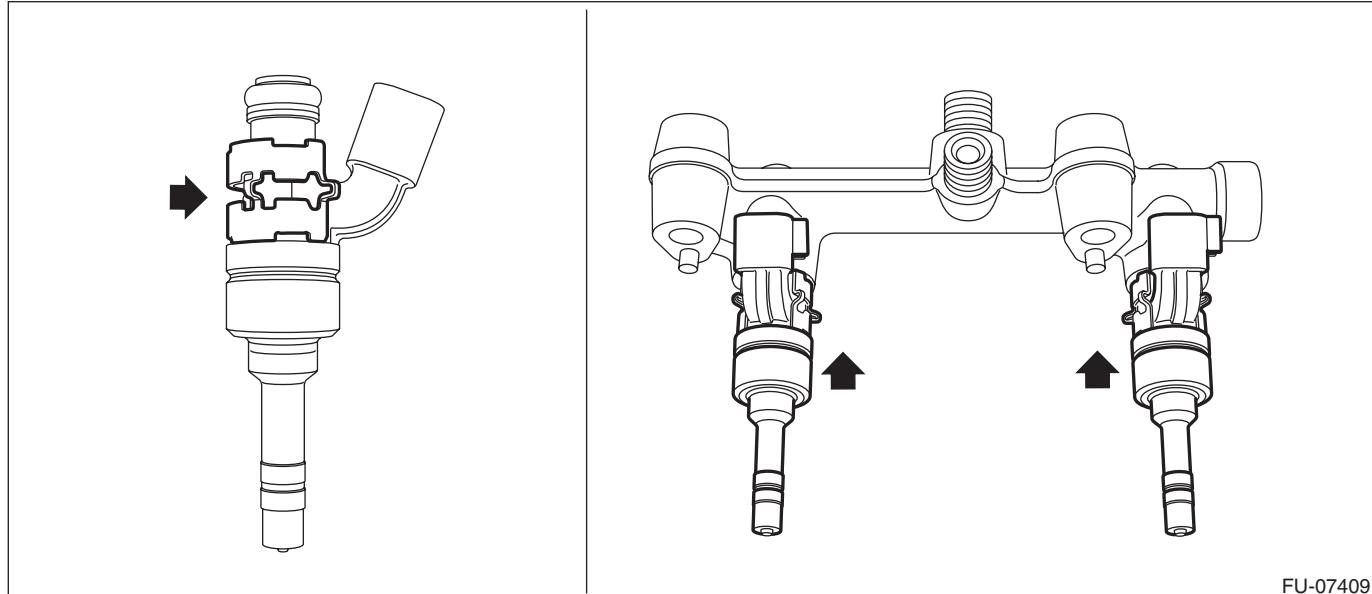
- 6) Install the fuel pipe insulator No. 3. <Ref. to FU(w/o STI)-50, FUEL PIPE INSULATOR NO. 3, INSTALLATION, Fuel Insulator.>
- 7) Install the fuel pipe insulator No. 2. <Ref. to FU(w/o STI)-50, FUEL PIPE INSULATOR NO. 2, INSTALLATION, Fuel Insulator.>
- 8) Install the fuel pipe insulator No. 1. <Ref. to FU(w/o STI)-49, FUEL PIPE INSULATOR NO. 1, INSTALLATION, Fuel Insulator.>
- 9) Install the intake manifold. <Ref. to FU(w/o STI)-29, INSTALLATION, Intake Manifold.>
- 10) Connect the ground terminal to battery sensor. <Ref. to NT-5, BATTERY, NOTE, Note.>

### 2. FUEL INJECTOR LH

- 1) Replace injector seal, retainer, and O-ring with a new part. <Ref. to FU(w/o STI)-64, REPLACEMENT, Fuel Injector.>
- 2) Set the holder to the fuel injector, and install it to the fuel injector pipe LH.

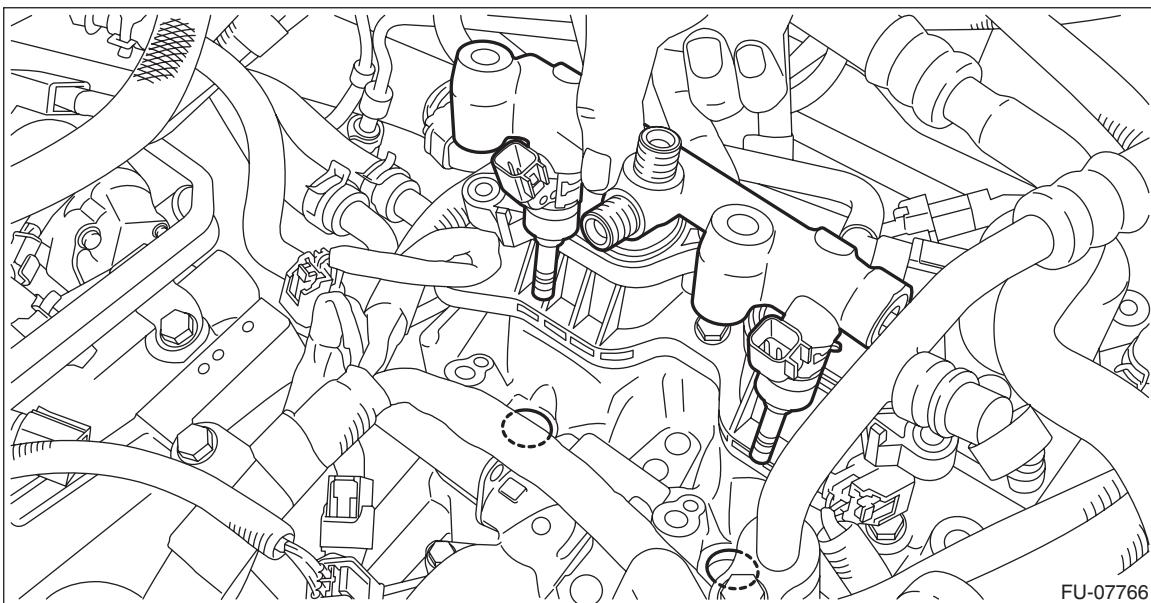
**CAUTION:**

**Always use a new holder.**



FU-07409

- 3) Install the fuel injector pipe LH and fuel injector as a single unit to the cylinder head.



FU-07766

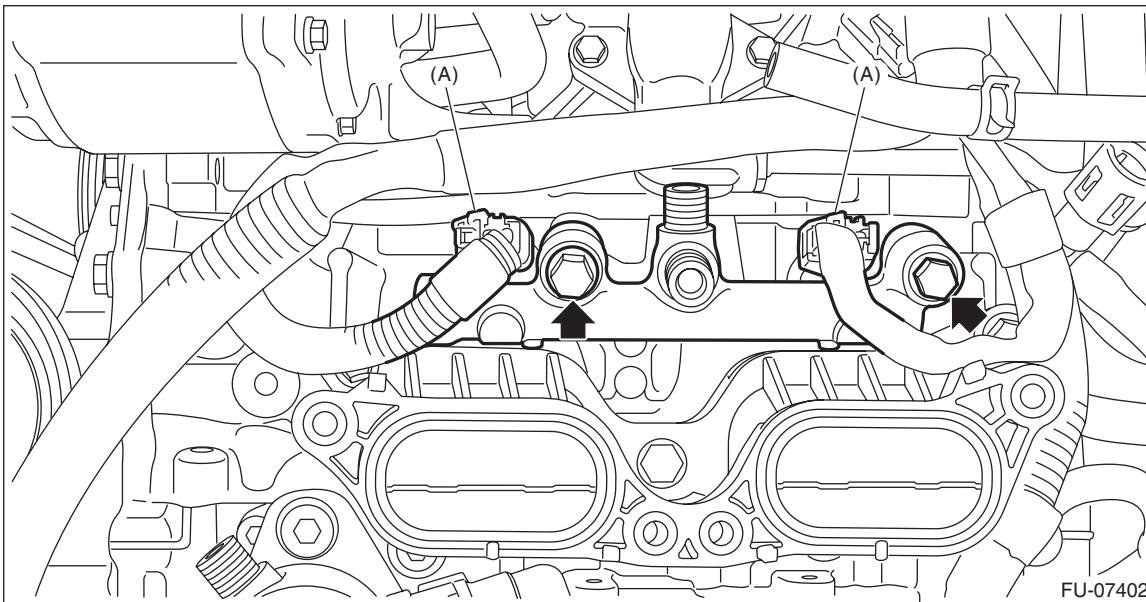
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 4) Tighten the bolt on fuel injector pipe LH, and connect the connector (A) to the fuel injector.

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**



- 5) Install the high-pressure fuel delivery pipe assembly.

**CAUTION:**

**Always use a new high-pressure fuel delivery pipe assembly.**

- (1) Temporarily tighten the flare nut (A) to the fuel injector pipe by hand until it is seated, and secure the high-pressure fuel delivery pipe assembly to the water pipe assembly using bolts (B).

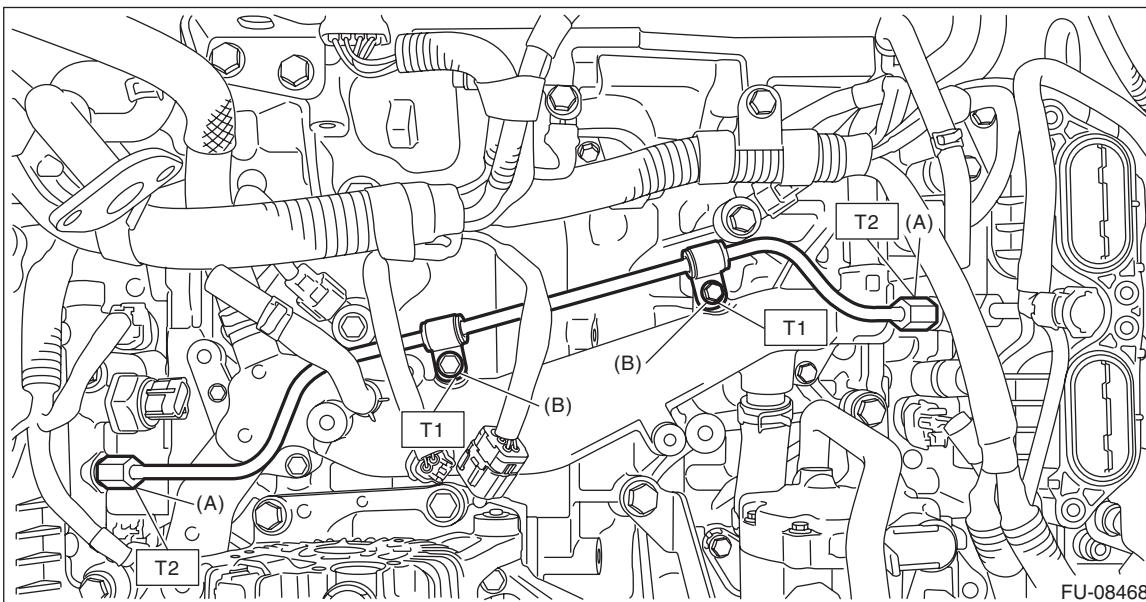
**Tightening torque:**

**T1: 6.4 N·m (0.7 kgf·m, 4.7 ft-lb)**

- (2) Tighten the flare nuts (A).

**Tightening torque:**

**T2: 25 N·m (2.5 kgf·m, 18.4 ft-lb)**



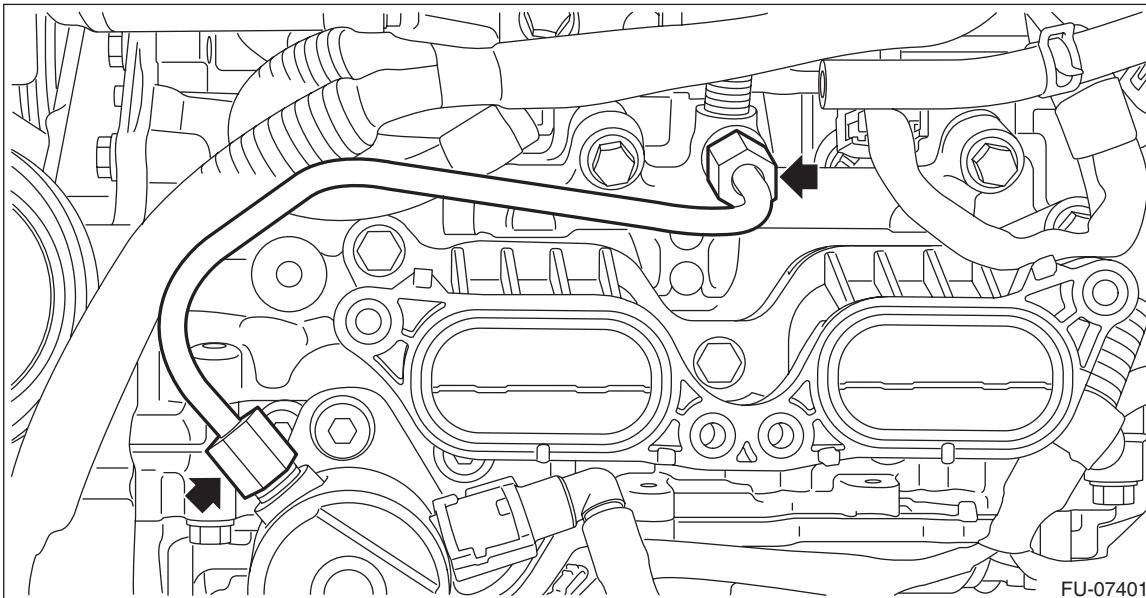
- 6) Temporarily tighten the high-pressure fuel delivery pipe by hand until it is seated, and tighten the flare nuts on both ends.

**CAUTION:**

Always use a new high-pressure fuel delivery pipe.

**Tightening torque:**

25 N·m (2.5 kgf·m, 18.4 ft-lb)



- 7) Install the fuel pipe insulator No. 3. <Ref. to FU(w/o STI)-50, FUEL PIPE INSULATOR NO. 3, INSTALLATION, Fuel Insulator.>
- 8) Install the fuel pipe insulator No. 2. <Ref. to FU(w/o STI)-50, FUEL PIPE INSULATOR NO. 2, INSTALLATION, Fuel Insulator.>
- 9) Install the fuel pipe insulator No. 1. <Ref. to FU(w/o STI)-49, FUEL PIPE INSULATOR NO. 1, INSTALLATION, Fuel Insulator.>
- 10) Install the fuel pump insulator. <Ref. to FU(w/o STI)-49, FUEL PUMP INSULATOR, INSTALLATION, Fuel Insulator.>
- 11) Install the intake manifold. <Ref. to FU(w/o STI)-29, INSTALLATION, Intake Manifold.>
- 12) Connect the ground terminal to battery sensor. <Ref. to NT-5, BATTERY, NOTE, Note.>

# Fuel Injector

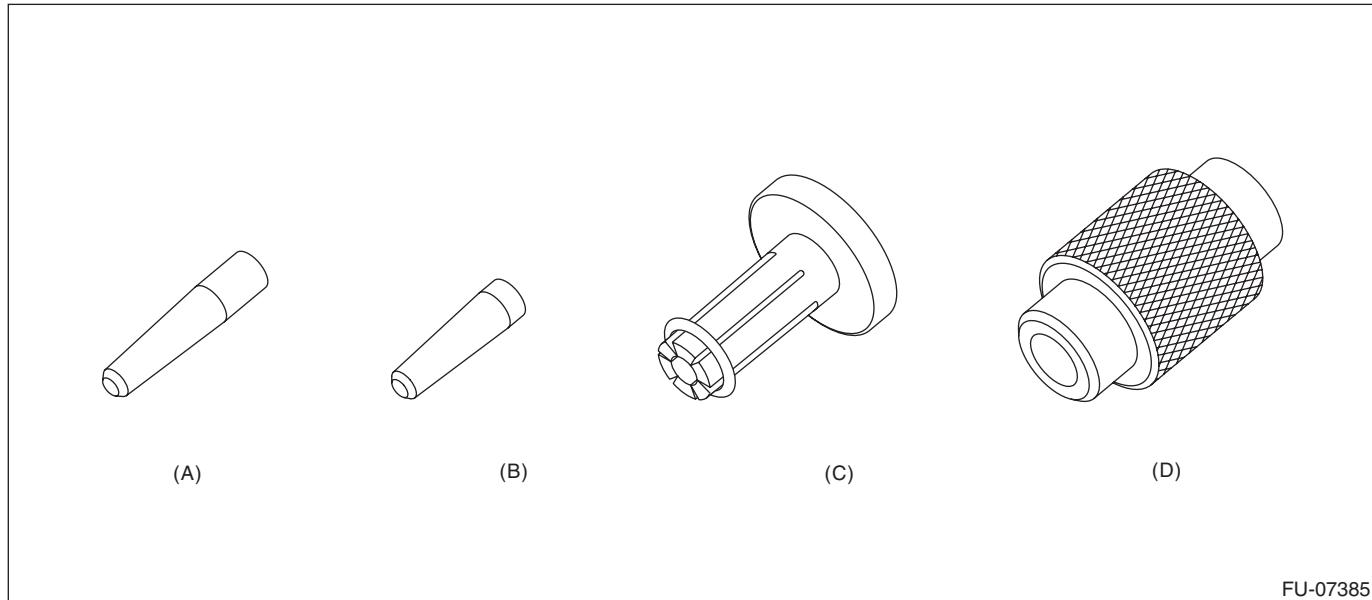
## FUEL INJECTION (FUEL SYSTEMS)

### C: REPLACEMENT

#### CAUTION:

- Perform work without using gloves.
- Always use the ST when installing the injector seal.

ST 18683AA000 INJECTOR SEAL INSTALLER



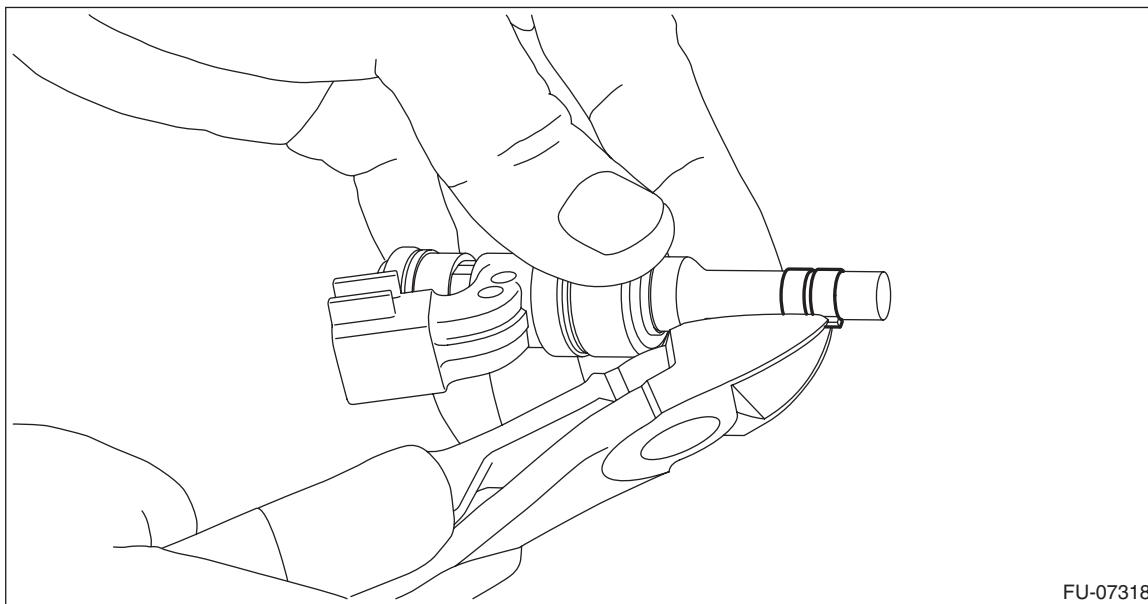
FU-07385

- (A) Seal guide A      (B) Seal guide B      (C) Injector seal installer  
(D) Injector seal adjuster

1) Using a pair of nippers, cut off the injector seal by pinching it.

#### CAUTION:

Be careful not to damage the fuel injector.

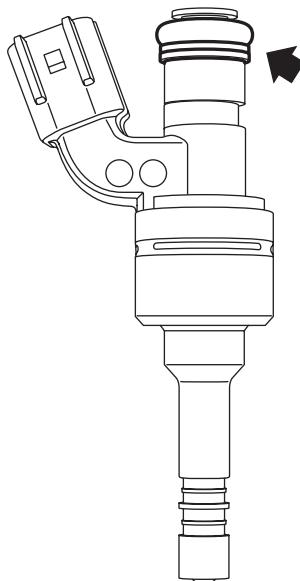


FU-07318

# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 2) Remove the O-ring and backup ring from the fuel injector.

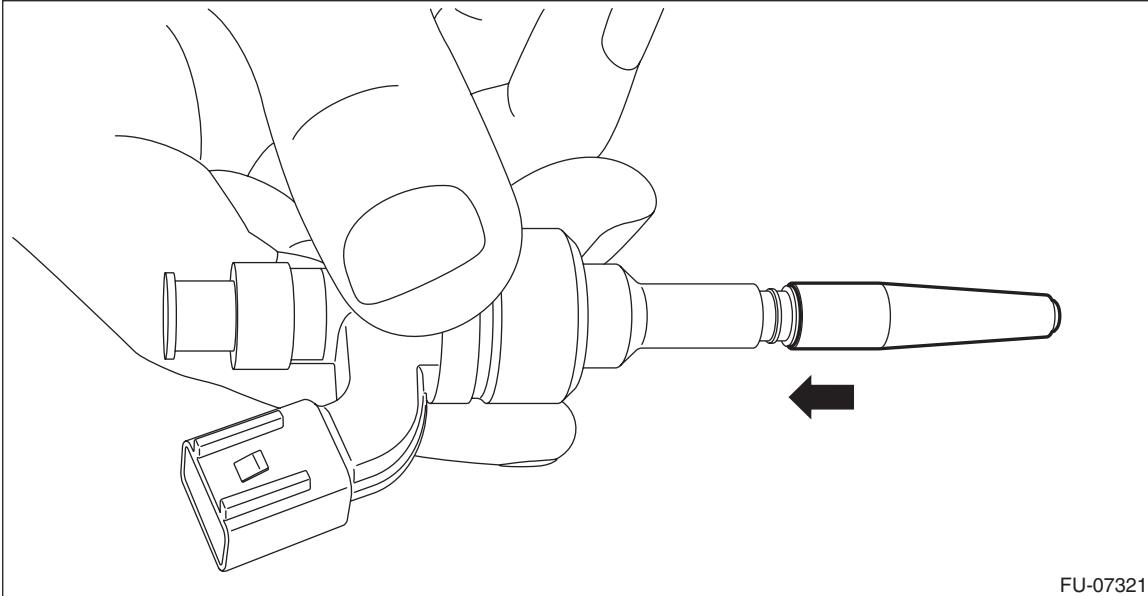


FU-07319

- 3) Attach the seal guide A to the fuel injector.

NOTE:

Two types of seal guides are provided. So, do not mix up the type to be used.

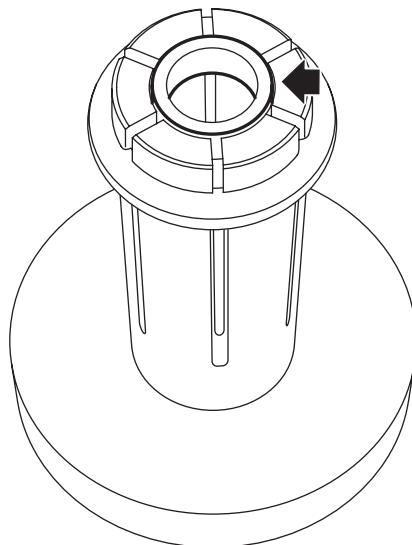


FU-07321

# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 4) Set the injector seal to the injector seal installer.

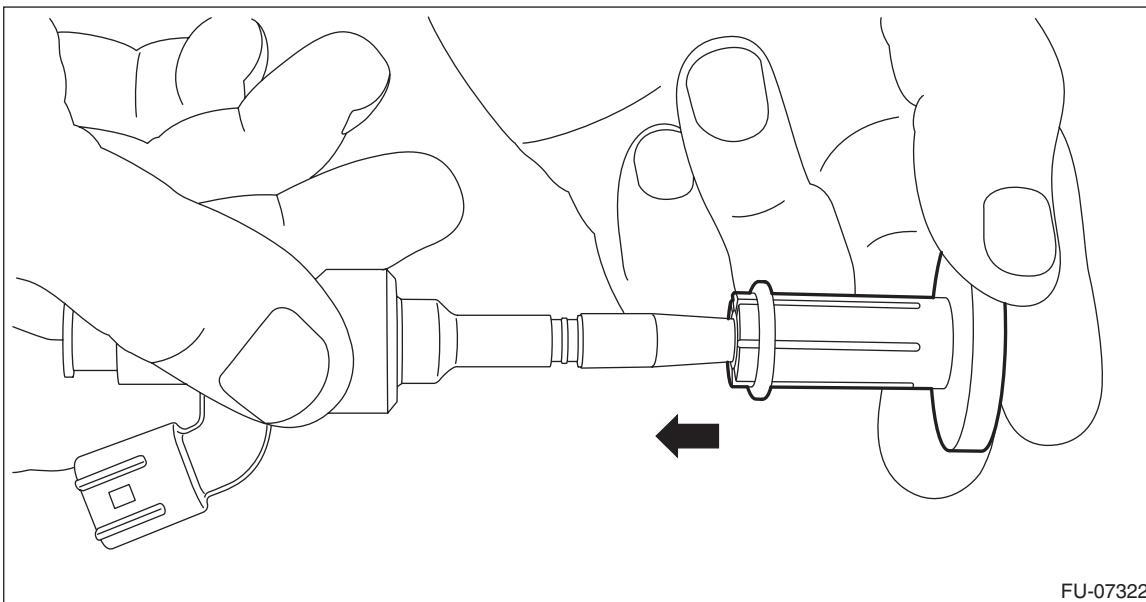


FU-07320

- 5) Push in the injector seal installer slowly in the direction of the arrow, and attach the injector seal to the fuel injector.

**CAUTION:**

- Insert it so that the injector seal is installed straight.
- Be careful that the injector seal does not go beyond the fuel injector groove.



FU-07322

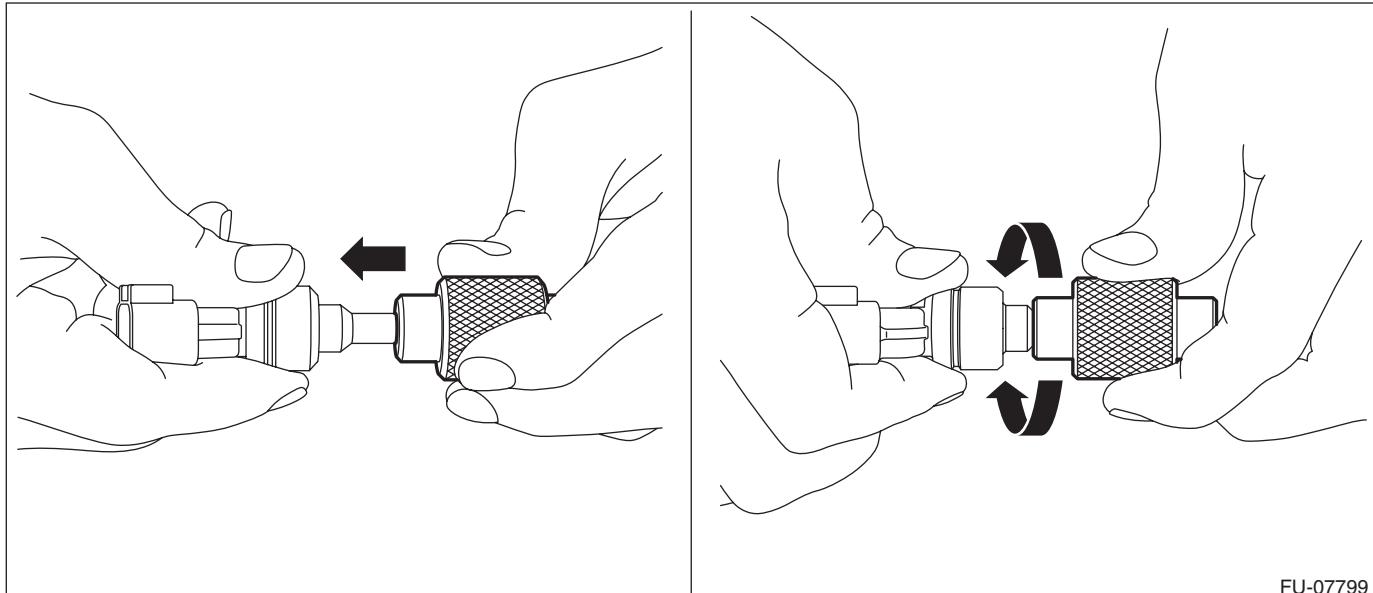
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

6) While rotating the injector seal adjuster to left and right by 90° for each side, slowly insert it all the way.

NOTE:

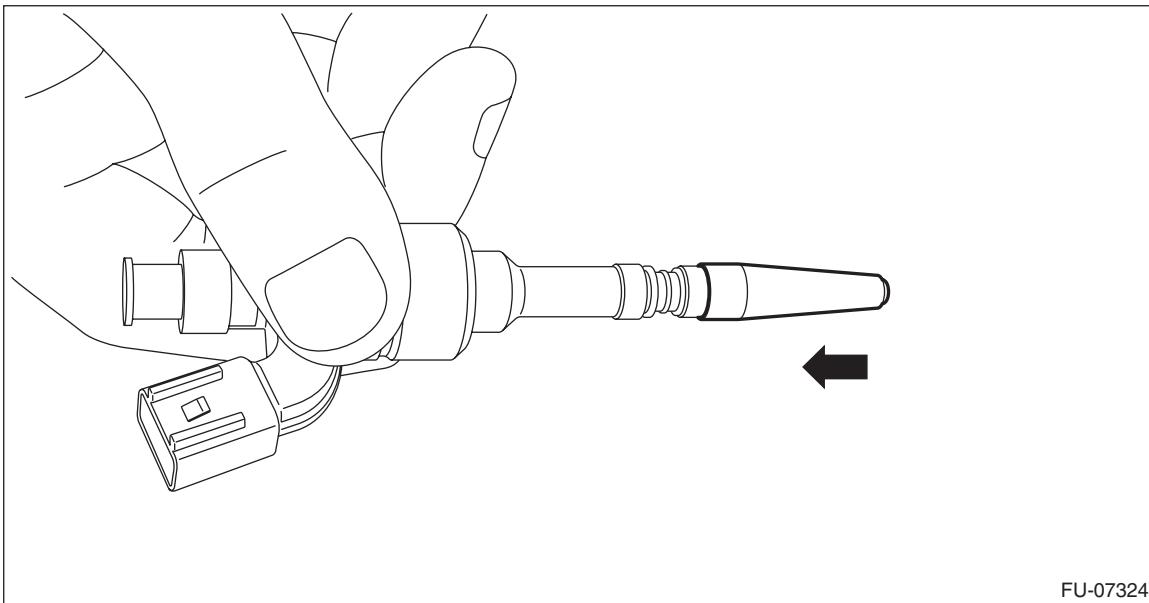
- Apply a thin coat of gasoline to the injector seal and injector seal adjuster.
- With the injector seal adjuster fully inserted, rotate it to left and right approx. ten times by 90° for each side to normalize the injector seal.



7) Attach the seal guide B to the fuel injector.

NOTE:

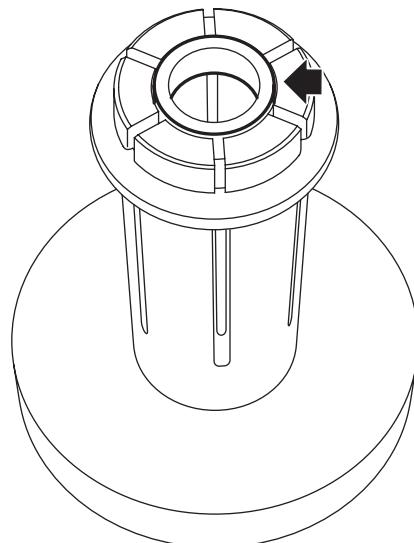
Two types of seal guides are provided. So, do not mix up the type to be used.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

8) Set the injector seal to the injector seal installer.

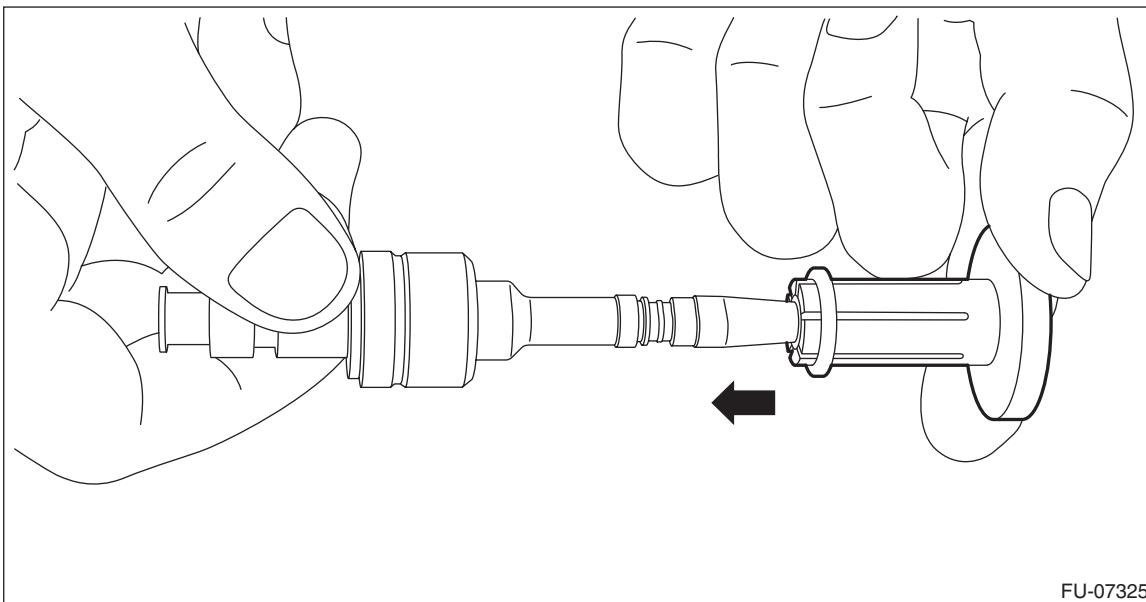


FU-07320

9) Push in the injector seal installer slowly in the direction of the arrow, and attach the injector seal to the fuel injector.

### CAUTION:

- Insert it so that the injector seal is installed straight.
- Be careful that the injector seal does not go beyond the fuel injector groove.



FU-07325

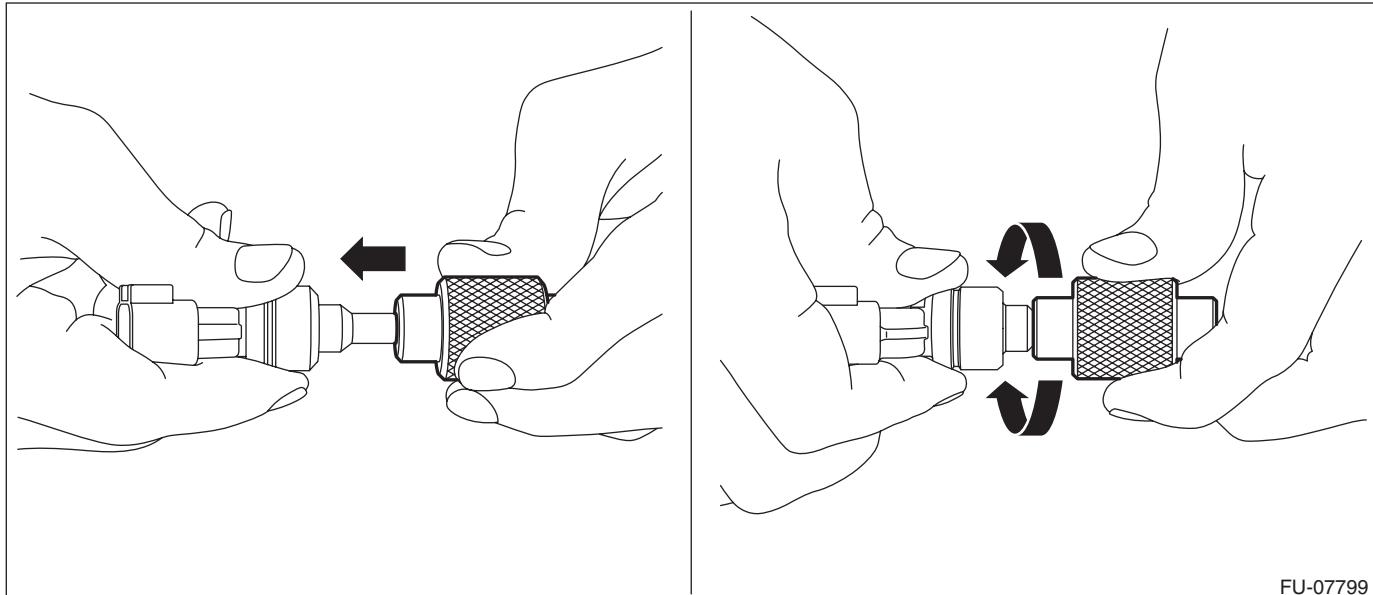
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

10) While rotating the injector seal adjuster to left and right by 90° for each side, slowly insert it all the way.

NOTE:

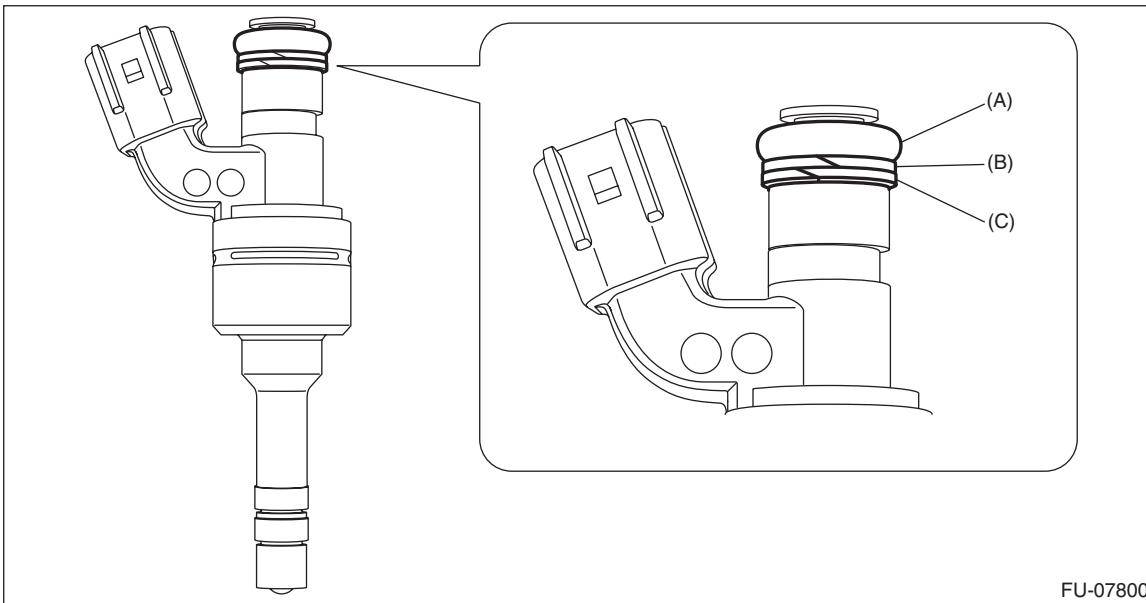
- Apply a thin coat of gasoline to the injector seal and injector seal adjuster.
- With the injector seal adjuster fully inserted, rotate it to left and right approx. ten times by 90° for each side to normalize the injector seal.



11) Attach two backup rings and O-ring to the fuel injector.

NOTE:

Use new backup rings and O-ring.



(A) O-ring

(B) Backup ring (brown)

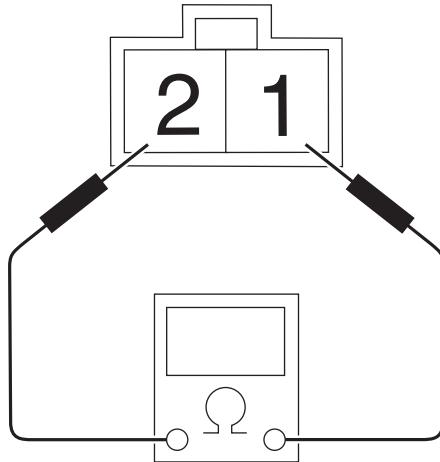
(C) Backup ring (white)

# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

### D: INSPECTION

- 1) Check that the fuel injector has no deformation, cracks or other damages.
- 2) Measure the resistance between fuel injector terminals.



FU-05950

Terminal No.	Standard
1 and 2	Approx. 2.1 $\Omega$ (when 20°C (68°F))